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# EXPLAINING TRENDS IN UK IMMIGRATION

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**ABSTRACT**

Since the 1970s Britain has gone from being a country of net emigration to one of net immigration, with a trend increase in immigration of more than 100,000 per year. This paper represents the first attempt to model the variations in net migration for British and for foreign citizens, across countries and over time. A simple economic model, which includes the selection effects of differing income distributions at home and abroad, largely accounts for the variations in the data. The results suggest that, while improved economic performance in the UK relative to overseas has tended to increase immigration, rising UK inequality has had an even larger effect. Immigration policies at home and abroad have also increased net immigration, particularly in the 1990s.

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## 1. Introduction

In the last 20 years the United Kingdom has become a country of net immigration. During the 1960s and 1970s emigration exceeded immigration so that net immigration was persistently negative. Since then net immigration has progressively increased. The best available measure of long term trends indicates an increase in the annual net immigration from -24 thousand in the early 1970s to 89 thousand in the late 1990s, a total increase of 113 thousand. Recent trends are even more dramatic. From the trough in 1991-3 to the peak of 1998-2000 net immigration surged by more than 100 thousand per annum.

So why has UK net immigration increased so dramatically? On one view it is simply the result of immigration policies at home and abroad and is therefore chosen by policymakers. But evidence for other countries shows that a good deal of the variation in immigration can be explained by economic forces.[1] This issue is particularly important since the UK government has embarked on a series of reforms to immigration policy, the most recent of which is the Nationality, Immigration and Asylum Act of 2002. These policies have been implemented in the absence of any quantitative research on the determinants of immigration to the UK.[2] Consequently, assessments of the effects of policy, as distinct from economic forces, on the size and composition of the net and gross flows have been lacking.

This paper is the first to provide a set of econometric estimates explaining migration flows between Britain and the relevant source or destination countries. The flows are explained in part by the usual economic variables such as business cycles and

[1] Recent studies include Cobb-Clark and Connolly (1997) for Australia, Clark et. al. (2002) for the United States, Karemera et. al. (2000) for the United States and Canada, and Karras and Chiswick (1999) for Germany. Other studies are summarised by Bauer and Zimmermann (1999).

[2] A survey of UK immigration by Glover et. al. (2001) published by the Home Office contains some assessment of the factors behind recent trends in immigration as background to the 2002 Act and the government White Paper that preceded it. However it does not cite any quantitative studies and it only provides evidence of a negative relationship between net immigration and UK unemployment since 1984.

per capita incomes at home and abroad. But a key new finding is that changing income distribution also matters, and that growing inequality in Britain accounts for a significant share of the recent rise in net immigration. Shifts in policy must also be taken into account and these seem to have been important, particularly in the late 1990s.

The following section outlines the trends and composition of migration to and from Britain. This is followed by a summary of immigration policies at home and abroad and then by a discussion of incentives and selectivity in the decision to migrate. This highlights the effects on the flows of migrants of relative income, of earnings inequality and of policy. The subsequent sections report random effects panel estimates, using data on net and gross immigration from the International Passenger Survey. The data cover 13 source/destination areas over 25 years and are analysed for British citizens and for foreign citizens. The results support the view that relative income, inequality and policy all play a part in determining these flows.

Finally, an attempt is made to decompose the influences that account for trends in total net immigration, both in the long-run and in the short-run. This indicates that trends in unemployment and relative income have contributed only modestly to the increase in net immigration. More important are the effects of the long term increase in UK inequality and the shifts in European and British policy during the 1990s. The paper concludes with some speculations about prospective future trends in UK immigration.

## 2. Trends in UK international migration

The only comprehensive statistics on international migration for Britain come from the International Passenger Survey (IPS), which has been taken in its present form since 1964. It is derived from a sample of travellers to and from the United Kingdom surveyed at airports, seaports and the channel tunnel. Migrants are defined in the IPS as those who

are entering (or leaving) for an intended period of at least a year, after at least a year abroad (or in Britain). Trends in the IPS net immigration figures can be seen in Figure 1. The long-term increase in net immigration displays short run fluctuations around a clear upward trend. From the early 1980s the historic pattern of net emigration turns into net immigration, increasing sharply from the mid-1990s.

As is widely acknowledged, the published IPS data, which are grossed up from a stratified sample, are subject to certain biases. They exclude movements to and from the Irish Republic (under the common travel area), and they exclude a significant proportion of asylum seekers and 'visitor switchers'--those who enter as short-term migrants and either change their status or overstay. The Office for National Statistics adjusts the overall net immigration balance to take account of this. Adjusted net immigration (the dotted line) exceeds the IPS figure by about 40 thousand per year between 1985 and 2000. But recently, in the light of the 2001 census results, it has been suggested that there are also significant upward biases--amounting to about 50 thousand per year in the 1990s. In this light, the unadjusted IPS figures used in what follows are more appropriate for assessing immigration trends rather than absolute levels.[3]

Figure 2 shows (unadjusted) net immigration divided between British citizens and foreign citizens. Most of the increase in net immigration before the 1980s was due to the declining net emigration of British citizens. Since then the trend has been relatively flat. By contrast, net immigration of foreign citizens drifted downwards very slightly until the early 1990s, after which there was a sharp increase. The IPS data also divides the flows of migrants by country, or region, of next or last residence.[4] Table 1 shows the direction of

[3] Adjusted figures are only available at the aggregate level since the mid-1980s and they are available at a more disaggregated level only since 1999. In order to maintain comparability over time and across different sources/destination regions there is no alternative but to use the unadjusted figures.

[4] These categories are not ideal but they are the lowest level of aggregation available in the published statistics.

net immigration over recent decades for British and foreign citizens combined. The decline in net emigration to 'Old Commonwealth' countries reflects, in part, the long-term decline in emigration of British citizens shown in Figure 2. For Australia and Canada, net emigration since the 1970s has decreased dramatically, while for New Zealand and South Africa it has become net immigration.

It is notable that there has been no upward trend in net immigration from the New Commonwealth, either from the Indian subcontinent, from Africa, or from the Caribbean. Among non-Commonwealth countries there has been a strong upward trend in net immigration from Europe, particularly the European Union. But there is little evidence of increases in net immigration from elsewhere. Overall, the rise in net immigration has come from the relatively developed OECD countries, rather than from the third world. Roughly the same applies to the surge from 1993 to 1998, some 85 percent of which is accounted for by the Old Commonwealth, Europe and the United States.

Net immigration represents the difference between much larger gross flows in both directions. As Table 2 shows, in the 1990s the net immigration balance was about one fifth of gross immigration, and in the 1970s net emigration was less than a fifth of gross emigration. The overall change in the balance was driven partly by a decline in gross emigration of British citizens and, more notably, by a rise in gross immigration of foreign citizens. The substantial gross immigration of British citizens, and gross emigration of foreign citizens, reflect the fact that many migrants are relatively short-term stayers. In the decade 1991-2000, 36 percent of immigrants and 28 percent of emigrants were intending to stay for less than three years or more, while 39 percent of immigrants and 55 percent of emigrants intended to stay for more than four years (Table 4).

It seems likely that these flows, particularly among those who were returning (and who would not face immigration controls), will be sensitive to economic conditions. But

not all migrants are workers; many come (or leave) as part of the family of a worker or for other reasons such as education. The IPS records the age, sex and economic status of immigrants and emigrants. Table 3 shows the net balance of these various categories over recent decades. Net immigration of females tends to exceed that of males and the overall growth in net immigration is largely due to an increase in the 15-24 age range and fall in net emigration among those aged 25-44. Among adults (those aged 15 and over) there is substantial net immigration of those described as students and significant increase in non-occupied adults. The non-worker categories, including the under 15's, represented 47 percent of the gross inflow and 43 percent of the gross outflow in the decade 1991-2000. Of course many of them would subsequently become workers, a point that is reflected especially by the persistent net immigration of students.[5]

The IPS records the occupations of immigrants and emigrants, but these are presented only in two broad categories: professional or managerial and manual or clerical. Over the last three decades, net emigration turned into net immigration in both categories and in the 1990s the net immigration of 'skilled' workers was more than double the net inflow of 'unskilled' (Table 3). But changes in the net balance hide the fact that both immigration and emigration have become more skilled. As Figure 3 shows, the percentage of professional and managerial among worker immigrants rose from 40 percent in 1971 to 72 percent in 2000, and their share among emigrants (the dotted line) rose by a similar amount. This change in the skill structure is an important characteristic of the overall trend in migration. It seems likely that this was due to three things. First, there is the general rise in skills among the workforce at home and abroad. Second there has been increasing skill selectivity of immigration policies in countries receiving British

[5] Some of those who arrived as students would have joined the UK labour force on the completion of their studies. But it also seems likely that some of those who returned would have given their future or intended occupations, rather than describing themselves as students.

immigrants, which have reduced the opportunities for unskilled British workers to emigrate. And third, mildly skill-selective policies in Britain have been combined with increasing incentives for skilled immigrants, as reflected in the widening income distribution.

## 3. Immigration policies in the UK and abroad

Since, in the econometric analysis, account is taken of policy, we now turn to a brief summary of relevant immigration policies. British immigration policy is governed by the Immigration Act of 1971, and subsequent modifications to it. Immigration control is administered by the Home Office Immigration and Nationality Department, although work permits were, until recently, issued by Overseas Labour Service of the Department for Education and Employment.[6] Irish citizens and nationals of European Economic Area countries are essentially free to live and work in Britain. Commonwealth citizens with right of abode, those who have British passports, and those who have acquired finite or indefinite leave to enter or remain also have the right of free entry.[7]

Those not otherwise entitled to work in Britain are required to have a work permit, applied for by a prospective employer. The number of work permits is not subject to an overall quota but permits are issued according to the level of qualification or for specific occupations in demand. Work permits are granted initially for four years but with the possibility of renewal for a fixed term or the granting of indefinite right to remain. The right to work is also available on a short- term basis to groups such as business people, journalists, diplomats, sports people and entertainers. Short-term work permits are also issued under a variety of schemes for working holiday-makers, agricultural workers, au pairs, teachers and those entering under the Training and Work Experience Scheme.

The work permit system has been subject to minor modifications since the 1970s, with major revisions in 2000 and 2002.[8] The number of work permits issued fell from 75 thousand in 1969 to a low of 15 thousand in 1982, rising again to 80 thousand in 1999. The sharp rise in the number of work permits issued in the late 1990s is indicative of a significant relaxation of policy adopted by the Labour administration from 1997 onwards, including an increased allocation of work permits and relaxation of controls on non-economic immigration. Under the 2002 Act, the government introduced a further expansion of immigration routes, including a new programme based on a points system to attract highly skilled immigrants.

Migrants under the work permit system may obtain indefinite leave to remain or be accepted for settlement, and may eventually qualify for UK citizenship. Spouses and children of primary immigrants can also acquire the right to settle and work in Britain, subject to certain criteria. In some circumstances, the right to family reunification is extended to parents and grandparents and to fiancé(e)s. In 1998, 20 thousand entered as dependants of work-permit holders and another 50 thousand under the family reunification scheme.

The other main groups of migrants to the UK are students and refugees. Students (not otherwise qualified for entry) are admitted if accepted for a course at a recognised educational institution, but without the right to work and only for the duration of the course. Britain's policy towards asylum seekers (not directly considered here) is based on its obligation under the 1951 Geneva Convention and the 1967 Protocol. About one third of asylum claims are accepted, either as Convention refugees or under the discretionary category of ‘exceptional leave to remain’.

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6 Now renamed Work Permits UK and transferred to the Home Office.

7 Current regulations can be found at: http://www.ind.homeoffice.gov.uk/.

Among the main *destination* countries for British immigrants there have been significant shifts in immigration policy since the 1960s. These include the abolition of preferences for immigrants from Britain and Europe, variations in total immigrant quotas, and the increasing use of selection by labour market characteristics, especially education and skills.[9]

In Canada the preference given to immigrants from the UK, France, the US and certain Commonwealth countries was abolished in 1962 and replaced with a system based on four different categories: sponsored dependants, nominated relatives, refugees and asylum seekers, and independent migrants. The admission of assisted relatives and independent migrants is based on selection through the points system first established in 1967. In Canada, in addition to having relatives, points are awarded for age, education, occupation, having pre-arranged employment, and fluency in English or French. This basic system was modified by the Immigration Acts of 1976, 1988 and 1993. Administratively-set targets for total admissions were sharply reduced in 1982-6 and then raised to over 200 thousand in the 1990s. As a result the share admitted under the points system was reduced in the 1980s but increased again in the 1990s (Green and Green, 1995, 1999). Modifications to the points system further increased the skill selectivity of immigration policy in the 1990s. By 1994, nearly half of all immigrants were admitted principally on labour market characteristics.

From 1973 Australia abandoned so-called "white Australia" policy, which gave preference chiefly to immigrants from Britain and Ireland, in favour of a nondiscriminatory system similar to that of Canada. The targets for admission were also reduced during the 1970s and expanded subsequently, but have varied from year to year

[8] On the system up to the late 1980s, see Salt and Kitching (1990); arrangements until the most recent changes are summarised in Glover et. al. (2001).

depending on labour market conditions. The points system - adopted originally in 1979 and radically revised in 1983 - is applied to independent migrants, business migrants, those nominated by employers and those sponsored by relatives. The criteria put weight on occupations in demand, education and experience. Over time, skill selectivity has increased and in the 1990s more than a third of migrants were selected on economic criteria.

In New Zealand, similar policies have been followed since the weakening in 1974, and abolition in 1987, of preferences for British and European immigrants. The points system adopted in 1991 stresses qualifications, age, experience, language skills and sponsored relatives. But, as compared with Australia, the New Zealand system has gone further in giving weight to general skills rather than to occupations in demand (Winkleman, 1999). In the 1990s, 65 percent of immigrants to New Zealand were points-tested. Both Australia and New Zealand operate a variable point score for admission that depends on labour market conditions.

In the United States, the 1965 Amendments to the Immigration and Nationality Act abandoned country quotas favouring western Europe, replacing this with an aggregate quota for the eastern hemisphere as a whole. Under the post-1965 system the overwhelming majority of visas were reserved for family reunification migrants, including non-immediate relatives. The 1990 Immigration Act expanded the number of employment-based visas from 54,000 to 140,000; nearly all of which were designated for skilled workers, and the total quota was increased by about 40 percent. But US immigration policy remains less skill-selective than that of the other traditional countries of immigration. Under the system in operation since 1992 more than 70 percent of visas are still reserved for family members.

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[9] Summaries of immigration policies in the major receiving countries can be found in Stalker

Like Britain, most of the countries receiving British immigrants operate programmes for temporary migration, often for the high-skilled or for occupations in demand. In Australia, employer-nominated skilled workers are admitted for two years (renewable once), and in Canada for three years (renewable). In the United States, the provision for admitting high skilled workers with H-1B visas for periods of up to three years (renewable once) was expanded under the 1990 Immigration Act. In all three countries and New Zealand, fixed period visas are also issued under various schemes for study and work experience, for working holidays and for business personnel or those moving within the same firm.

Among other countries immigration policies vary too widely to discuss in detail. Most countries operate a system of work permits or passes, generally for restricted periods of time and sometimes subject to quotas. Often, immigrants require sponsorship from an employer or family member and the right to remain or to become a citizen is strictly circumscribed. In some cases, rules for immigrants differ by source country or ethnicity. In some countries, such as Japan, and in other parts of Asia, immigration controls are relatively tight whereas in other cases such as in South America they are less restrictive.

## 4. Migration and selection

The effects of economic incentives on migration have been much studied, notably by Sjaastad (1962), Borjas (1987) and Chiswick (2000). The basic framework laid out by Borjas has been widely used to analyse the average "quality" of the immigrant flow, but it has less often been applied to the quantity of immigration or emigration. Here I use a variation of this framework to examine the effects of relative incomes, income inequality,

(1994), UN (1998) and OECD (1998). On international migration law, see Plender (1987).

and immigration policy on the numbers of migrants or, more specifically, on the probability that individuals will migrate from one country to another.

In the source country, y, skill endowments follow a normal distribution: $s \sim N(\mu_s, \sigma_s^2)$. The incomes that individual i (i = 1, …, n) receives at home in country y, and would receive if he/she were to migrate to country x, are:

$$\text{Income in destination: } w_{xi} = \alpha_x + \beta_x s_i, \text{ distributed as } w_x \sim N(\mu_x, \sigma_x^2)$$

$$\text{Income in origin: } w_{yi} = \alpha_y + \beta_y s_i; \text{ distributed as } w_y \sim N(\mu_y, \sigma_y^2) \qquad (1)$$

Here $\alpha_x$, $\beta_x$, $\alpha_y$ and $\beta_y$ are parameters of the respective earnings functions. The greater is $\beta$, the greater the return on skills and the more unequal is the country's income distribution. Thus income levels, and income inequality, differ in origin and destination but incomes in x are perfectly correlated with those in y across individuals in the origin country.

The costs of migration (including psychic costs) include three elements. Individual preferences for migration, in terms of equivalent income, $z_i$, follow a normal distribution, $z \sim N(\mu_z, \sigma_z^2)$, where z is independent of s (Cov (s,z) = 0). $z_i$ is interpreted as an individual-specific cost or compensating differential and hence $\mu_z$ is assumed to be positive. This ensures that not everyone migrates in response to an income differential favouring the destination country. Factors such as having relatives in the destination country could be interpreted as lowering the costs of emigration by reducing the value of $z_i$. There is also a direct cost, c. This is the same for all migrants and may also reflect immigration policy: tougher immigration policy raises the cost of migration for all immigrants by increasing c.

The probability that an individual, i, will migrate from country y to x, $m_i$, is:

$m_i$ = Prob ($w_{xi} - w_{yi} - z_i - c > 0$) , or

$m_i$ = Prob ($v > 0$), where $v = w_{xi} - w_{yi} - z_i - c$ (2)

Summing over all n individuals in source country y, the emigration rate to x is:

$$M = 1 - \Phi\left(\frac{-\mu_x + \mu_y + \mu_z + c}{\sigma_v}\right) \quad (3)$$

where $\Phi$ is the standard normal distribution function. Higher mean income in the destination or lower income in the source country increases the migration rate, as does a fall in the mean of personal migration costs such as might be associated with a larger expatriate community.

The standard deviation of v, can be written as:

$$\sigma_v = \sqrt{\sigma_x^2 + \sigma_y^2 + \sigma_z^2 - 2\sigma_x\sigma_y} \quad (4)$$

The effects of changes in income distribution depend on the sign of the numerator in the bracketed term in (3) as well as on the sign of the derivative of $\sigma_v$ with respect to $\sigma_x$ and $\sigma_y$. If the destination country has sufficiently high relative income adjusted for migration costs ($\mu_x > \mu_y + \mu_z + c$), *and* it is more equal ($\sigma_x < \sigma_y$) then an increase in destination inequality will increase immigration. Thus increasing inequality in Britain would tend to attract (relatively skilled) migrants from countries that were sufficiently poor and unequal. By contrast if income in Britain (adjusted for immigration costs) is sufficiently low relative to, say, OECD countries, then increasing inequality will increase migration from these provided that British inequality is greater. If neither of these cases hold then growing inequality will deter immigration. The effects for origin countries are exactly the

opposite. Thus increasing inequality in poor and unequal origin countries will tend to stem emigration if they are sufficiently unequal initially.

## 5. Data

The data on migration to and from Britain are from the International Passenger Survey, for which summary statistics were presented earlier. The survey covers about 0.2 percent of all travellers, only a fraction of whom are migrants. Although the data are subject to sampling error, non-response rates are relatively low.[10] Biases are most likely to arise because stated intentions may differ from actual behaviour (as in the case of asylum seekers or visa switchers) or because plans change. The survey results, grossed up using a complex weighting system, are published only for the source destination countries listed in Table 1 above. Thus it is not possible to further disaggregate the country groups. Because of changes in the countries included in country groups, EU and non-EU Europe were merged.[11] This gives thirteen country or country groups over the period from 1976 to 2000--a total of 325 country-year observations. These are for all migrants. While they can be divided between British and foreign citizens, they cannot be disaggregated by age or labour market status.

Series for real income per capita were obtained from the World Bank Global Development Network database.[12] These are an updated version of the Penn World Tables 5 and they are adjusted to purchasing power parities of 1985. Income data for the country groups represented in the IPS statistics were obtained by taking weighted

[10] The 95 percent confidence interval for gross immigration is about 5 percent. Clearly, it will be larger for net immigration and for migration to and from specific destinations. But if immigration is the left-hand side variable then sampling error will fall into the equation error term.

[11] The Middle East is separately distinguished but only from the 1980s and so this is subsumed in Other Foreign.

[12] Income and population data were obtained from the website: http://www.worldbank,org/research/growth/GDNdata.htm.

averages using (variable) population weights. Excluding the single countries and the aggregate of Bangladesh/India/Sri Lanka, the remaining six country groups are represented by 107 individual countries. However, China, the former Soviet Union, the former Yugoslavia and Ireland are excluded. A consistent annual series for the gini coefficient of equivalised household, post-tax incomes in the UK was provided by the Institute of Fiscal Studies.[13] Foreign income inequality was calculated from World Bank data, assembled by Deininger and Squire and augmented by the WIDER Institute.[14] The series used are those designated as "high quality" and are linearly interpolated between benchmark years as appropriate. The six multiple country groups represent a total of 82 countries and they are each aggregated using current population.

To capture the effects of expatriate communities in Britain we use the stock of foreign-born living in Britain in 1981 for each of the source countries or aggregates.[15] For the British living abroad we have similar figures for 1971, but only for the USA, Australia, Canada, New Zealand and South Africa. For the other country groups, where the numbers of British-born are likely to be small, the value was set to zero. Unemployment rates, which often feature in migration models, could only be obtained on a consistent basis for OECD countries. Since overseas unemployment rates did not turn out to be empirically important, only the UK unemployment rate is used. Other variables - including relative education levels and UK real house prices - also proved to be statistically insignificant in the regressions and are omitted in the results presented below.

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[13] I am grateful to Andrew Shephard who kindly made this series available to me. Further details and an analysis of trends in income equality (for 1979-97) are given in Clark and Taylor (1999). Steve Machin kindly provided an alternative series for UK wage inequality. This series gives similar results to those using income inequality and so only the latter are reported in the following sections.

[14] These data are available at: http://www.wider.unu.edu/wiid/wiid.htm. Certain adjustments were made according to whether the observations were for income/expenditure, gross/net income or individuals/households.

[15] These data are reported in ONS *International Migration,* 198?.

## 6. Immigration of foreign citizens

Random effects (RE) panel estimates of the determinants of immigration for the thirteen source areas by 25 years appear in Table 5. Random effects estimation exploits the cross-sectional variation in the data, as well as the time series variation, and these estimates are not rejected against the alternative of fixed effects. Overall the RE estimates explain 46 percent of the variation for net immigration and two thirds of the variation for gross immigration. In light of the relatively high gross flows, the emphasis here is chiefly on net immigration.

Now consider the explanatory variables. Note that the variable for the foreign born stock in 1981 has no time series variation and the European dummies are specific to flows to and from Europe. The UK unemployment rate is entered as a change (the current or lagged level was never statistically significant) and it has a negative effect as expected. Thus a one percentage point increase in unemployment over the previous year reduces net immigration of foreign citizens by about five thousand.[16] The log GDP ratio, the gini coefficient ratio and the interaction between the ratios of log GDP and the gini coefficient are entered with a one period lag.[17] The interaction term is introduced to allow the effect of inequality to depend on the income level of overseas countries relative to the UK, as mentioned above. The effect of the coefficient on the log GDP ratio is positive as expected and the coefficient implies that a ten percent increase in the ratio of UK to foreign income per capita increases immigration by 5.3 thousand. However, when the negative coefficient on the interaction term is taken into account (evaluating at the mean

[16] These and other effects are calculated by multiplying the coefficient by the number of country groups in order to obtain the effects on total immigration.

[17] One reason for using lagged variables is that there may be simultaneity between immigration and income distribution, see for example Lerman (1999) for the United States and Barrett et. al. (2000) for Ireland. Although unemployment is not lagged the evidence produced by Dustmann et. al. (2003) suggests that, for the UK, immigration has almost no effect on unemployment.

of the gini coefficient ratio: 0.75) a ten percent increase in relative income increases immigration by only 1.7 thousand.

The gini coefficient ratio gives a positive sign that is not statistically significant while the interaction term is negative and significant. Using the point estimates, the overall effect of an increase in UK relative inequality is small and negative. The negative interaction term means that the effect of UK relative inequality gets smaller the poorer is the source region. The coefficients therefore imply positive selection from relatively developed countries.[18] At the mean income ratio for the five developed regions, a ten percent increase in UK relative inequality would raise immigration by 3.6 thousand whereas for the eight less developed regions it would reduce immigration by 4.4 thousand.[19] This is what would be expected if rich source countries are relatively more equal than the UK while poor source countries are relatively less equal than the UK. But while the correlation between log relative income and the gini coefficient ratio is negative, it is not strong: across the 13 country/group means the correlation coefficient is -0.15. This is because some of the relatively poor countries, for example, in Asia, are relatively equal, while others in Africa and South America are relatively unequal.

The migrant stock has a large and statistically significant effect. The coefficient for net migration implies that every thousand of the immigrant stock generates a further 126 immigrants each year. Clearly, this is the combined effect of lower costs of immigration faced by those with friends and relatives living in the UK and family reunification policy. It is notable, however, that the effects are much larger for gross immigration, suggesting that the migrant stock generates higher flows in both directions.

[18] Borjas (1993) argued that the introduction in Canada, from the 1960s, of policies that were more skill-selective than those in the United States led to a larger share of Canadian immigrants than of American immigrants coming from more developed regions. It seems that rising income inequality in Britain has gradually been producing a similar selection effect to that produced by policy in Canada.

The two dummies for Europe reflect the EU enlargements of 1986 and 1995, each with a one year lag. While the former takes a small coefficient the latter is surprisingly large, raising annual net immigration from Europe by nearly 19 thousand in 1996-2000. This may reflect an initial inward surge, since the increase in gross immigration from 1987 was largely offset by a reverse flow. Nevertheless, the effects on gross immigration seem larger than would be expected from small enlargements and probably also reflect a general increase in intra-European mobility. Finally the dummy for 1998 to 2000 (which represents the loosening of UK immigration policy) has a strong positive effect. In these years the effect was to raise net immigration by 59 thousand per annum.

**7. Emigration of British citizens**

Random effects panel estimates for British citizens for the 25 years and 13 destinations appear in Table 6. Given that the left-hand side variable is for net emigration, the signs of the variables are expected to be the opposite of those in Table 5. These estimates explain 41 percent of the variation in net emigration and more than half of the variation in gross emigration. As with the estimates for foreign citizens, random effects is not rejected against the alternative of fixed effects. Also as before, we focus on the estimates for net rather than gross emigration.

The coefficient on the change in UK unemployment is positive as expected. A one percentage point increase in the unemployment rate over the previous year increases net emigration by 8.2 thousand. The coefficients on the relative income and inequality terms offer further support for the model outlined above, and they have the opposite signs to those for the immigration of foreign citizens in Table 5. The coefficient on the log GDP ratio is about the same magnitude as that for foreign citizens in Table 5. But when the

[19] The developed regions are taken to be Europe, the United States, Australia, Canada, and New

interaction term is taken into account, the effect of an increase in UK relative income, although negative, is very small.

It is interesting that relative inequality is much more powerful for British citizens than for foreign citizens. The gini coefficient ratio has an overall negative effect, which implies that a 10 percent rise in relative inequality reduces emigration by 18.2 thousand. The strong effect of inequality may be explained, at least in part, in terms of the framework set out above. If the migration cost facing prospective British emigrants (as represented by $\mu_z + c$ in equation (3) is sufficiently large, then even high income destinations will look relatively unattractive. And if they are also relatively equal, then the effect of rising relative inequality at home will be negative for emigration. This would mean that the more skilled would be less likely to emigrate, so that total emigration would fall and emigrants would be less positively selected. The coefficients do indeed tend to support this interpretation. They imply that a ten percent rise in UK relative inequality would reduce net emigration to the five developed regions by 20.9 thousand and to the eight other regions by 8.6 thousand.

As with immigrants, the stock of UK-born living abroad is important, although it has no time series variation. The coefficient implies that each thousand of the British-born living abroad generates net emigration of 107 British citizens per year--an effect similar in magnitude to that in Table 5 for the immigration of foreign citizens. Surprisingly though, the UK-born coefficient for gross emigration is smaller and not significant.

The dummies for country-specific policy changes give mixed results. Political change in South Africa has a strong negative effect. For Australia, the dummy for 1979-2000 - intended to capture the effects of introducing the points system - is positive. This

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Zealand.

probably reflects the increase in immigration targets in the later 1970s, after the sharp tightening in the mid-1970s. But the dummy for 1983 onwards, when points testing was significantly toughened, gives the expected negative coefficient. For Canada, the sharp cut in immigration targets for 1982-6 is strongly reflected in the data but a dummy representing further expansion from 1993 was insignificant. Similarly for the United States, the expansion of the quota from 1992 has no significant effect. But for New Zealand the 1991 reforms had a weak positive effect, contrary to what might have been expected.

The dummies for Europe from 1987 and 1996 tell a similar story to that for foreign citizens. From 1987 there was a large effect on gross emigration but only a small and insignificant increase on net emigration. By contrast, from 1996 both net and the gross emigration increased sharply. It remains to be seen whether this increase in emigration to Europe will be sustained in the longer term.

**8. Why has net immigration increased?**

The results for British and foreign citizens show that the same influences have operated with opposite signs on foreign immigration and British emigration. In order to measure their impact on net immigration as a whole, Table 7 provides estimates for total net immigration. The country dummies for policy shifts in South Africa, the United States, New Zealand and Europe from 1987, which are statistically insignificant in the first column, are excluded in the second column. The insignificance of the foreign-born population in the UK is somewhat surprising and it largely reflects an inverse correlation with the UK-born population overseas. It is also notable that the overall effect of the dummy for Europe 1996-2000 indicates that the net in-migration of foreign citizens dominates the net out-migration of British citizens. This more parsimonious specification

gives results that are broadly consistent with what would be expected from those for the two separate groups in Tables 5 and 6 above and do not require extensive comment.

The estimated coefficients in the second column in Table 7 are used to decompose the increase in aggregate immigration into the contributions of the different variables. Since the cross-sectional variation is highly influential in the random effects regression, it is important to see if these estimates can explain a major part of the variation over time in total net immigration. Two decompositions are presented in Table 8, based on applying the coefficients to the average values of the variables for five-year periods. Over the long term, 1976-80 to 1996-2000, the predictions account for more than 90 percent of the overall increase in net immigration of 113 thousand per annum. Similarly, for the decade 1986-90 to 1996-2000 more than three quarters of the 69 thousand increase is explained.

Unemployment was rising in the late 1970s but falling in the late 1990s and this accounts for a rise of 13.4 thousand per annum in net immigration between these periods. The modest increase in British GDP per capita, relative to the country groups in the data, produced an increase of 2.7 thousand per annum in net immigration. It is striking that by far the major effect stems from the trends in inequality, which accounts for a rise of 36.6 thousand-- about one third of the total increase. Over this period the UK gini coefficient rose by nearly eight percentage points (from 0.247 to 0.323) while the average foreign gini increased by just one percentage point. Thus the dramatic effect of inequality was entirely due to rising UK inequality rather than to falling inequality abroad.

Among the policy-related effects, the Europe dummy added more than 12 thousand to the annual net inflow while those for other countries had smaller positive effects--largely due to South Africa. But the largest effect arises from the dummy representing UK immigration policy since 1998, which adds 33.8 thousand per annum to the net immigration over the period since 1996.

For the shorter period since the late 1980s the unemployment effects are reversed. UK unemployment was falling faster in the late 1980s than it was in the late 1990s, so that its contribution to the change between periods is negative. The effect of rising relative income was to generate an extremely modest increase of 1.8 thousand. The effects of rising relative UK inequality, though smaller than over the longer run, still account for nearly 20 percent of the observed rise in total net immigration. Finally, the effects of the dummies for European and UK policy account for a two thirds of the increase in net immigration since the late 1980s.

## 9. Conclusion

Five main conclusions follow from the results presented in the preceding sections. They are as follows:

- A simple empirical migration model, including income distribution as well as factors such as relative income and unemployment, is supported by the data and gives results that accord closely with predictions of the theory.
- The same model can account for both the inward flows of foreign citizens and the outward flow of British citizens, both gross and net, although the parameter values differ between the two groups.
- While immigration policies at home and abroad undoubtedly condition the effects of economic variables, the effects of major *shifts* in policy can also be discerned.
- The explanatory variables can predict most of the rise in UK immigration since the late 1970s and over the shorter period since the late 1980s.
- Although income and unemployment variables contribute to this explanation, the key variables are rising inequality in the UK and the policy dummies for Britain and the EU.

How can we interpret these results? Relative inequality has the largest effects on the declining net emigration of British citizens. Immigration policies in several key destination countries became increasingly skill-selective from the 1970s. While this reduced the ability of the low skilled to emigrate, the increasing relative return to skills in Britain that is reflected in rising inequality reduced the incentive for the high skilled to emigrate. Thus the skill content of emigration did not rise any faster than the skill content of immigration but total net emigration declined.

The policy effects are more difficult to interpret since these are represented by dummies. Growing integration and falling barriers to migration within the EU clearly have raised both the immigration of European citizens to Britain and emigration of British citizens to Europe. But the sharp increase in net immigration of foreign citizens in recent years has occurred across the board and this appears to be due to more permissive UK immigration policy.

What of the future? Since unemployment is unlikely to keep falling, since relative income effects on immigration are small, and since the rise in inequality has largely ceased, it seems unlikely that these forces will cause a further substantial increase in net immigration. It seems more likely that future increases in net immigration will be largely the result of changing immigration policies. Given the large effects that the modest changes in the late 1990s had on the numbers, it seems likely that the more expansionary policies that became effective from 2003 will have an even larger effect.

It is appropriate to conclude on a note of caution. This study is the first attempt to provide econometric estimates that account for cross-section and time series variation in UK net immigration. The findings presented here will no doubt be modified and refined by future research. But there are major limitations on what can be achieved with the limited data available and improvements in the published migration data are badly

needed. From a research perspective, further effort should also be made to characterise immigration policies and to examine the effects of policy not only on the number of immigrants but on the flow of human capital.

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**Table 1**
**UK Net Immigration by Country of Origin or Destination**
(International Passenger Survey: Thousands per decade)

| | 1971-80 | 1981-90 | 1991-2000 |
|---|---|---|---|
| **Commonwealth** | | | |
| Australia | –189.8 | –181.2 | –43.4 |
| Canada | –148.3 | –47.7 | –7.5 |
| New Zealand | –61.0 | 20.0 | 13.5 |
| South Africa | –67.3 | –3.3 | 78.6 |
| Other African Commonwealth | 81.4[3] | 54.3 | 72.1 |
| Bangladesh, India, Sri Lanka | 108.4 | 109.5 | 106.5 |
| Pakistan | 67.8[1] | 77.9 | 62.5 |
| Caribbean Commonwealth | –0.2 | 3.0 | 3.9 |
| Other Commonwealth | 57.8 | 9.6 | 48.5 |
| **Foreign** | | | |
| European Union | –70.2[4] | 63.2[5] | 127.2[6] |
| Rest of Europe | –21.7 | 3.1 | 26.5 |
| United States | –45.0 | –62.8 | –19.9 |
| Rest of America | 1.1 | 1.5 | –2.5 |
| Other Foreign | –62.5[2] | 27.1 | 108.1 |

**Source:** Office for National Statistics, *International Migration,* (various issues).
**Notes:** (1) From 1973 only; (2) Includes Pakistan 1968-72; (3) West Indies only; (4) Coverage reflects enlargement in 1973; (5) Reflects enlargement in 1981 and 1986; (6) As constituted in 1995.

**Table 2**
**Gross and Net Immigration Flows**
(International Passenger Survey: Thousands per decade)

| | 1971-80 | 1981-90 | 1991-2000 |
|---|---|---|---|
| **All Nationalities** | | | |
| Gross Immigration | 1907.7 | 2185.4 | 2798.3 |
| Gross Emigration | 2255.5 | 2111.1 | 2223.2 |
| Net Immigration | –347.8 | 74.3 | 575.1 |
| **UK Citizens** | | | |
| Gross Immigration | 828.1 | 975.9 | 1046.0 |
| Gross Emigration | 1558.3 | 1346.8 | 1257.6 |
| Net Immigration | –730.2 | –370.9 | –211.6 |
| **Foreign Citizens** | | | |
| Gross Immigration | 1079.6 | 1209.5 | 1752.3 |
| Gross Emigration | 697.2 | 764.3 | 965.6 |
| Net Immigration | 382.4 | 445.2 | 786.7 |

**Source:** Office for National Statistics, *International Migration* (various issues).

**Table 3**
**Net Immigration by Age and Occupational Status**
(International Passenger Survey: Thousands per decade)

| | 1971-80 | 1981-90 | 1991-2000 |
|---|---|---|---|
| **Sex** | | | |
| Male | –216.1 | –20.5 | 238.3 |
| Female | –132.1 | 94.7 | 337.0 |
| **Age** | | | |
| <15 | –82.0 | 27.8 | 58.1 |
| 15-24 | 65.7 | 148.7 | 399.6 |
| 25-44 | –282.7 | –53.5 | 121.1 |
| >45 | –49.3 | –48.7 | –3.3 |
| **Occupation (adults)** | | | |
| Professional/Managerial | –112.5 | 2.9 | 156.1 |
| Manual/Clerical | –274.0 | –89.2 | 75.0 |
| Students | 148.1 | 61.0 | 193.8 |
| Other Adults (unoccupied) | –30.0 | 54.6 | 100.7 |

**Source:** Office for National Statistics, *International Migration,* (various issues).
**Note:** Other Adults are chiefly those labelled as 'housewives'.

**Table 4**
**Intended Length of Stay among Immigrants and Emigrants**
(International Passenger Survey: percent of total)

| | 1-2 years | 3-4 years | More than 4 years | Not sure |
|---|---|---|---|---|
| Immigrants | 35.6 | 18.3 | 39.4 | 6.7 |
| Emigrants | 27.6 | 11.9 | 54.4 | 6.0 |

**Source:** Office for National Statistics, *International Migration,* (various issues).

**Table 5**
**Immigration of Foreign Citizens**
**Random Effects Panel Estimates, 1976-2000**

| | **Net** | **Gross** |
|---|---|---|
| Constant | –1.83 | –0.53 |
| | (0.7) | (0.1) |
| Change in UK unemployment rate | –0.41 | –0.37 |
| | (2.4) | (2.0) |
| Log GDP per capita ratio | 4.07 | 2.48 |
| (UK to foreign, t-1) | (2.5) | (1.3) |
| Gini coefficient ratio | 2.44 | 8.03 |
| (UK to foreign, t-1) | (0.9) | (2.7) |
| Log GDP per capita ratio (t-1) × | –3.71 | –5.85 |
| Gini coefficient ratio (t-1) | (2.0) | (3.0) |
| Foreign-born population in UK, | 9.68 | 24.68 |
| 1981 | (2.1) | (2.4) |
| Europe 1987-98 | 3.23 | 14.94 |
| | (1.9) | (2.4) |
| Europe 1996-8 | 18.83 | 29.73 |
| | (8.8) | (13.6) |
| Dummy 1998-2000 | 4.54 | 5.62 |
| | (6.2) | (7.4) |
| $R^2$ Within | 0.38 | 0.65 |
| Between | 0.58 | 0.69 |
| Overall | 0.46 | 0.68 |
| Breusch-Pagan $\chi^2_{(1)}$ | 199.41 | 1464.19 |
| Hausman $\chi^2_{(9)}$ | 3.61 | 0.44 |
| No. of observations | 325 | 325 |

**Note:** 'z' statistics in parentheses

**Table 6**
**Emigration of UK Citizens**
**Random Effects Panel Estimates, 1976-2000**

| | Net | Gross |
|---|---|---|
| Constant | 12.11 | 17.23 |
| | (4.1) | (5.2) |
| Change in UK unemployment rate | 0.63 | 0.52 |
| | (2.9) | (2.7) |
| Log GDP per capita ratio | –4.47 | –3.56 |
| (UK to foreign, t-1) | (2.1) | (1.6) |
| Gini coefficient ratio | –15.52 | –9.25 |
| (UK to foreign, t-1) | (4.3) | (2.6) |
| Log GDP per capita ratio (t-1) × | 5.63 | 1.36 |
| Gini coefficient ratio (t-1) | (2.3) | (0.6) |
| UK-born population overseas, | 8.23 | 4.25 |
| 1971 | (2.5) | (0.9) |
| South Africa 1991-2000 | –4.78 | –4.09 |
| | (2.5) | (2.2) |
| Australia 1979-2000 | 13.59 | 9.16 |
| | (4.1) | (2.8) |
| Australia 1983-2000 | –8.65 | –4.53 |
| | (3.2) | (1.8) |
| Canada 1982-6 | –6.12 | –5.14 |
| | (2.5) | (2.2) |
| USA 1992-2000 | 0.38 | 3.03 |
| | (0.2) | (1.6) |
| New Zealand 1991-2000 | 1.63 | 2.08 |
| | (0.8) | (1.2) |
| Europe 1987-2000 | 0.43 | 14.74 |
| | (0.2) | (7.2) |
| Europe 1996-2000 | 8.99 | 6.88 |
| | (3.4) | (2.8) |
| $R^2$ Within | 0.21 | 0.28 |
| Between | 0.67 | 0.60 |
| Overall | 0.41 | 0.52 |
| Breusch-Pagan $\chi^2_{(1)}$ | 67.36 | 821.28 |
| Hausman $\chi^2_{(13)}$ | 9.02 | 1.40 |
| No. of observations | 325 | 325 |

**Note:** 'z' statistics in parentheses

**Table 7**
**Total Net Immigration (UK and foreign citizens)**
**Random Effects Panel Estimates, 1976-2000**

| | Net | Net |
|---|---|---|
| Constant | –11.17 | –11.63 |
| | (3.6) | (3.9) |
| Change in UK unemployment rate | –0.92 | –0.94 |
| | (3.1) | (3.2) |
| Log GDP per capita ratio | 6.22 | 6.36 |
| (UK to foreign, t-1) | (2.7) | (2.8) |
| Gini coefficient ratio | 15.74 | 17.62 |
| (UK to foreign, t-1) | (3.6) | (4.6) |
| Log GDP per capita ratio × | –5.23 | –5.74 |
| Gini coefficient ratio | (1.9) | (2.4) |
| UK-born population overseas, | –9.91 | –11.13 |
| 1971 | (3.3) | (4.6) |
| Foreign-born population in UK, | 1.65 | -- |
| 1981 | (0.4) | |
| South Africa 1991-2000 | 5.12 | 5.10 |
| | (2.1) | (2.2) |
| Australia 1979-2000 | –12.69 | –12.11 |
| | (3.2) | (3.1) |
| Australia 1978-2000 | 12.62 | 12.38 |
| | (3.5) | (3.4) |
| Canada 1982-6 | 6.19 | 6.38 |
| | (1.9) | (2.0) |
| US 1992-2000 | 2.02 | -- |
| | (0.8) | |
| New Zealand 1991-2000 | –1.49 | -- |
| | (0.6) | |
| Europe 1987-2000 | 2.95 | -- |
| | (2.1) | |
| Europe 1996-2000 | 11.55 | 12.04 |
| | (2.8) | (3.8) |
| Dummy 1998-2000 | 4.52 | 4.33 |
| | (3.7) | (3.6) |
| $R^2$ Within | 0.29 | 0.28 |
| Between | 0.93 | 0.93 |
| Overall | 0.53 | 0.53 |
| Breusch-Pagan $\chi^2_{(1)}$ | 0.08 | 0.17 |
| Hausman $\chi^2_{(10,8)}$ | 16.96 | 13.69 |
| No. of observations | 325 | 325 |

**Note:** 'z' statistics in parentheses

**Table 8**
**Effects on Total Net Immigration**
**(thousands per annum)**

| | 1976-80 to 1996-2000 | 1986-90 to 1996-2000 |
|---|---|---|
| Change in UK unemployment rate | 13.4 | –6.1 |
| Log GDP per capita ratio | 2.6 | 0.6 |
| Gini coefficient ratio | 36.6 | 13.1 |
| Europe dummy | 12.0 | 12.0 |
| Other country dummies | 5.4 | 4.1 |
| UK policy dummy | 33.8 | 33.8 |
| Explained total | 103.8 | 57.5 |
| Actual total | 113.0 | 69.4 |

**Figure 1**
**Total Net Immigration, 1964-2000**
( International Passenger Survey and Adjusted Total)

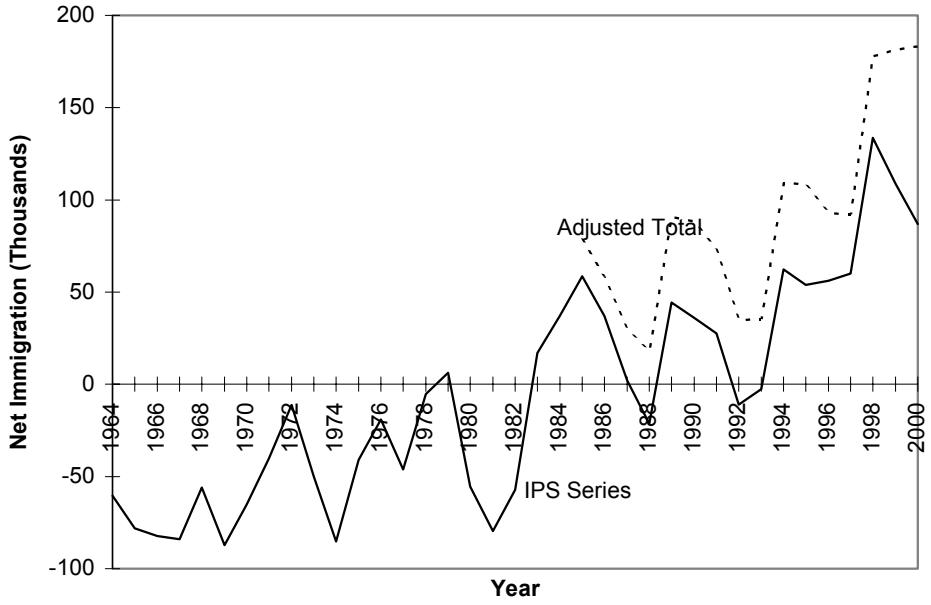


**Figure 2**
**Net Immigration of British and Foreign Citizens, 1964-2000**
(International Passenger Survey)

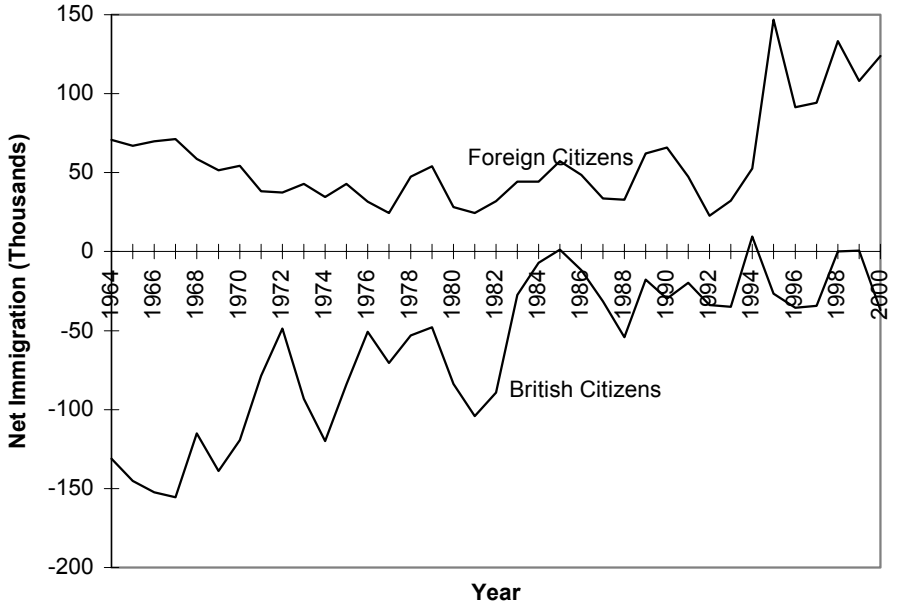

**Figure 3**
**Skill Composition of Immigrants and Emigrants, 1969-2000**
(Of those with Occupations; International Passenger Survey)